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### **REMARKS**

Responsive to the Official Action mailed November 17, 2003, Applicants provide the following remarks. Reconsideration and allowance of the subject application, as amended, are respectfully requested.

#### **Claim Amendments**

Claim 1 has been amended to incorporate the limitations of claim 2. Claim 2 has been cancelled. Claims 3, 5, 7 and 8 have been amended for consistency with amended claim 1. Claim 9 has been amended to incorporate the limitations of claim 10. Claims 11, 12, 14 and 15 have been amended for consistency with amended claim 9. Claims 16-20 have been cancelled without prejudice.

#### **Drawing Amendments**

The amendments to FIGS. 1-6 are made in an earnest effort to address the Examiner's objection to the drawings as detailed in paragraph 1 of the first Official Action. Applicants respectfully submit that in view of the amendments to the drawings made herein, the Examiner's objection to the drawings should be withdrawn upon reconsideration.

#### **35 U.S.C. §102(a) Rejections.**

Claims 1-2, 4-6, 9-10, 12-13, 16 and 19-20 have been rejected under 35 U.S.C. § 102(a) as being anticipated by Tsuritani et al. (T. Tsuritani et al., "Performance Comparison Between

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SCDCF-Based System and RDF-Based System in Slope-Compensating Transoceanic WDM Transmission", Electronics Letters, Vol. 36, No. 5 2<sup>nd</sup> March 2000). In making this rejection, the Examiner states: "Tsuritani et al teaches in page 447, right col., first paragraph that the fiber type for the segments can be chosen from single mode fiber (SMF), slope compensating dispersion compensation fiber (SCDCF) and reverse dispersion fiber (RDF), where SMF has positive dispersion and positive dispersion slope, RDF has negative dispersion and negative dispersion slope, and SCDCF has negative dispersion and positive dispersion slope." (emphasis added). Applicants respectfully traverse this rejection.

Independent claims 1 and 9 each require a combination of at least three different optical fiber types. Independent claim 1 requires a "third optical fiber type having one from the group of (1) a positive dispersion and a negative dispersion slope, and (2) a negative dispersion and a positive dispersion slope." Independent claim 9 requires a "third optical fiber type having a dispersion opposite signed from the dispersion of the first optical fiber type and having a dispersion slope opposite signed from the dispersion slope of the second optical fiber type."

Tsuritani fails to teach or suggest a "third optical fiber type" as required by independent claims 1 and 9. The Examiner refers to the first paragraph of the right column on page 447 of Tsuritani. The copy of Tsuritani provided with the Official Action does not include page numbering. As such, Applicants cannot specifically locate the portion of Tsuritani referenced by the Examiner. Applicant's note, however, that in referring to the "Experimental Setup" Tsuritani states:

We used two kinds of fiber to construct the dispersion flattened fibre spans. The first segment after the EDFA is conventional SMF (dispersion: +18 ps/nm/km,

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dispersion slope  $+0.06 \text{ ps/nm}^2/\text{km}$ , transmission loss:  $0.18\text{dB/km}$ ), the second segment in front of the EDFA is SCDCF (dispersion:  $-95 \text{ ps/nm/km}$ , dispersion slope  $0.3 \text{ ps/nm}^2/\text{km}$ , transmission loss:  $0.6\text{dB/km}$ ) or RDF (dispersion:  $-20 \text{ ps/nm/km}$ , dispersion slope  $-0.6 \text{ ps/nm}^2/\text{km}$ , transmission loss:  $0.24\text{dB/km}$ ), which has a ***negative dispersion and a negative dispersion slope*** to form dispersion flattened transmission fibre spans. (emphasis added).

Clearly, the reference in Tsuritani to an SCDCF having a dispersion of  $-95 \text{ ps/nm/km}$ , dispersion slope of  $0.3 \text{ ps/nm}^2/\text{km}$  is a typographical error in the reference. In fact, Tsuritani specifically refers to the SCDCF and the RDF as having "negative dispersion and negative dispersion slope." This is confirmed in the "Results and Discussion" of Tsuritani, wherein it is stated: "The fibre span length of six dispersion flattened fiber spans was  $\sim 45\text{-}46\text{km}$  for both types of SMF and SCDCF or RDF fibre span. The dispersion slope was  $<0.0008 \text{ ps/nm}^2/\text{km}$  for both cases." Tsuritani could not have achieved a dispersion slope of  $<0.0008 \text{ ps/nm}^2/\text{km}$  if the SMF dispersion slope was  $+0.06 \text{ ps/nm}^2/\text{km}$  and the SCDCF dispersion slope was  $0.3 \text{ ps/nm}^2/\text{km}$ . Obviously, there is a typographical error in Tsuritani regarding the sign of the numerical value for the dispersion slope exhibited by the SCDCF fiber. The SCDCF fiber in Tsuritani actually exhibited a "negative dispersion and negative dispersion slope."

Applicants thus find nothing in Tsuritani that teaches or suggests an apparatus including a "third fiber type" as required by independent claims 1 and 9. Since essential limitations of independent claims 1 and 9 are absent from Tsuritani et al, Applicants respectfully submit that the rejection of these claims under 35 U.S.C. § 102(a) should be withdrawn upon reconsideration. Claims 16-20 have been cancelled. Claims 2 and 4-6 depend from claim 1 and claims 10, 12-13 depend from claim 9. These claims are in condition for allowance by virtue of their dependency for the reasons adduced above, as well as for their own limitations.

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Claims 1, 9, 16 and 19-20 have been rejected under 35 U.S.C. § 102(a) as being anticipated by Mukasa et al. (U.S. Patent No. 6,606,437). Claims 16-20 have been cancelled without prejudice, rendering the rejection thereof moot. Claim 1 has been amended to incorporate the limitations of claim 2, and claim 9 has been amended to incorporate the limitations of claim 10. Since the Examiner has not applied Mukasa et al. against claims 2 and 10, incorporation of these limitations into claims 1 and 9 is believed to render the Examiner's rejection over Mukasa et al. moot. Moreover, Applicants do not find any teaching in Mukasa of the "a plurality of link spans" required by amended claims 1 and 9.

Applicants respectfully submit, therefore, that the rejection of claims 1, 9, 16 and 19-20 under 35 U.S.C. § 102(a) in view of Mukasa et al. should be withdrawn upon reconsideration.

**35 U.S.C. §103 Rejections.**

Claims 1, 3, 8-11 and 15-18 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Tanaka et al. (U.S. Patent No. 6,324,317). In making this rejection, the Examiner states: "It is obvious from FIG. 18(A) that DCF 4c should have a positive dispersion. Also, Tanaka et al. teaches in col. 17, lines 41-42 that DCF 4c should have a dispersion in the range from -0.03 to +0.03 ps/nm<sup>2</sup>/Km. Therefore, a fiber type of positive dispersion with negative dispersion slope can be used for DCF 4c." Applicants traverse this rejection.

Applicants respectfully submit that the Examiner has misunderstood the teachings of Tanaka. At col. 17, lines 35-2, Tanaka states:

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Referring to FIG. 9, in all cases that the RDF ratio is equal to or larger than 20% and equal to or smaller than 40%, the value of wavelength dispersion-slope of the RDF 4b must be equal to or larger than  $-0.16 \text{ ps/nm}^2/\text{km}$  and equal to or smaller than  $-0.07 \text{ ps/nm}^2/\text{km}$ , so that the average value of wavelength dispersion-slope in a hybrid transmission line falls within a range from  $-0.03$  to  $+0.03 \text{ ps/nm}^2/\text{km}$ . (emphasis added).

Tanaka does not teach or suggest that the slope of the DCF 4c should be between 0.03 to  $+0.03 \text{ ps/nm}^2/\text{km}$ , as suggested by the Examiner. Instead, Tanaka teaches that the “average value of wavelength dispersion-slope in a hybrid transmission line” should be in the recited range. In fact, the DCF 4c is disclosed as having a positive dispersion and a positive dispersion slope to compensate for the negative dispersion and the negative dispersion slope of the reverse dispersion fiber (RDF). See. col. 13, lines 25-31, col. 16, lines 44-67, and col. 17, lines 1-3.

Tanaka is thus devoid of any teaching or suggestion of a “third optical fiber type” as required by independent claims 1 and 9. As such, the claimed invention could not have been obvious in view of Tanaka at the time it was made. Applicants respectfully submit, therefore, that the rejection of these claims under 35 U.S.C. § 103(a) should be withdrawn upon reconsideration. Claims 16-20 have been cancelled. Claims 3 and 8 depend from claim 1, and claims 10, 11 and 15 depend from claim 9. These claims are in condition for allowance by virtue of their dependency for the reasons adduced above, as well as for their own limitations.

Claims 7 and 14 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Tsuritani in view of Tanaka et al. Applicants respectfully traverse this rejection.

Claim 7 depends directly from claim 1, and claim 14 depends directly from claim 9. These claims are thus allowable over Tsuritani and Tanaka by virtue of their dependency for the

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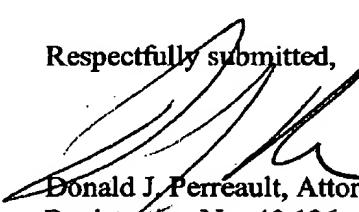
reasons adduced above, as well as for their own limitations. Again, neither Tsuritani nor Tanaka teaches or suggests a "third optical fiber type", as required by independent claims 1 and 9. Applicants respectfully submit, therefore, that the rejection of claims 7 and 14 under 35 U.S.C. § 103(a) should be withdrawn upon reconsideration.

In light of the foregoing claim amendments and remarks, all of the presently pending claims are believed to be in a condition for allowance. Reexamination and reconsideration are respectfully requested.

Early allowance is earnestly solicited. In the event the Examiner deems personal contact desirable in disposition of this application, the Examiner is respectfully requested to call the undersigned attorney at (603) 668-6560.

In the event there are any fee deficiencies please charge them (or credit any overpayment) to our Deposit Account No. 50-2121.

Respectfully submitted,

  
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